

Woldemariam, W., Olek, J., and McDaniel, R. (2010): “European HNA Mixture Design Practices for Tire- Pavement Noise Reduction”

Porous asphalt (PA) and thin, gap-graded (TG) mixtures are widely used in Europe to reduce tire-pavement noise (TPN). European material specifications for PA and TG mixtures and their component aggregates, binders and additives recommend certain requirements in order to provide improved TPN performance and acoustic characteristics. Mixture design parameters such as air void content (AVC), aggregate gradation, maximum aggregate size (MAS), and binder and fiber contents are also specified in order to improve the acoustic performance of PA and TG mixtures. This paper outlines the requirements for PA and TG mixes used in Europe and elsewhere. Specific topics covered include aggregate properties and gradations, binder grades, types and content of additives and required mixture properties to achieve noise reduction. The use of reclaimed asphalt pavement in these types of mixtures is also discussed. Techniques to control binder drain down are also presented. Lastly, the paper describes the noise reduction levels achieved using the European practices, as well as methods to ensure acoustic durability.

Wulf, T. Dare and Bernhard R. (2008): The Effect of Grinding and Grooving on the Noise Generation of Portland Cement Concrete Pavement. Euronoise ([www.acoustics08-paris.org](http://www.acoustics08-paris.org)). June 29 - July 4, 2008

In this investigation, studies were done to understand the effects of various grinding and grooving parameters to investigate their effect on noise generation at the tire- pavement interface. Grinding uses diamond- infused blades that re closely spaces such that the fins between the blade tracks break off exposing an entirely new surface. For grooving, the blades are more widely spaced such that the fins do not break off and the surface texture remains largely unchanged except for grooves that are used for water drainage control. Both procedures used independently or in combination, have an effect on the noise produced by the tire- pavement interaction. Variation of grinding parameters was shown to have as much as a 3 dBA effect on noise generation. Variation in the grooving parameters has a secondary effect, which allows grooves to be added to texture without overall effect on overall noise. In this paper the effect on noise of the different parameters, such as grinding depth, blade width, and blade spacing, for grinding and grooving will be illustrated.